MISSOURI DEPARTMENT
of AGRICULTURE

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# Pullorum Disease and Testing Procedure

# Pullorum Disease

Few diseases are more devastating to poultry producers than pullorum. First identified in 1899, the bacteria *Salmonella pullorum* causes heavy losses in chicks and poults and decreases the productivity of adult birds. An infection that begins with a single bird can spread quickly through a flock, causing mortality as high as 80 percent or more.

### Transmission

Pullorum disease is usually transmitted in the egg, from hen to offspring, but may also be spread through:

- breathing or consuming contaminated dust, down, droppings or broken eggs
- mating with an infected male
- contaminated footwear, clothing and equipment
- unsanitary building environments, nesting areas and hatching or brooding equipment

While chickens seem to be the most natural host for pullorum, the disease can also affect turkeys, ducks, geese, quail and other birds. Pullorum is rarely found in mammals and rarely passes from one mammal to another.

# Preventing Pullorum Disease

The Missouri Department of Agriculture recommends buying hatching eggs and poultry stock only from National Poultry Improvement Plan (NPIP) participating flocks. As there is no treatment or specific vaccine for pullorum, it is critical that producers practice good biosecurity once a pullorum-typhoid clean flock is established. State law requires all poultry breeders and hatcheries selling baby poultry or hatching eggs to be pullorum free. Participating flocks in Missouri can be found in the Poultry Yearbook at mda.mo.gov or through USDA at aphis.usda.gov.

# National Poultry Improvement Plan

In Missouri, to sell hatching eggs or day-old poultry stock, to exhibit poultry or import poultry into the state, eggs and/or birds must be certified pullorum-typhoid free through the National Poultry Improvement Plan or test negative for pullorum within 90 days of the regulated activity.

The National Poultry Improvement Plan (NPIP) began in the early 1930s to eliminate pullorum-typhoid from commercial poultry. Since 1992, the NPIP has been administered by the Missouri Department of Agriculture, providing pullorum testing services for commercial breeders, hatcheries and other poultry facilities. The Department also tests birds at county fairs, poultry shows and other events. This program has expanded to include testing and certification procedures for other diseases of poultry, including *Salmonella enteritidis*, avian mycoplasmas and avian influenza.

Flocks that achieve a 100 percent pullorum-free test result are recognized by the Missouri Department of Agriculture and receive certification and are listed in the Department's Poultry Yearbook as well as USDA's NPIP Directory.

# How to Participate in the NPIP

Applications to participate in the NPIP are available through the Missouri Department of Agriculture. Once an application is received, the Department schedules a farm visit to explain NPIP provisions, perform flock testing and inspections.

Each participant in good standing is issued an approval number to be used when shipping eggs and chicks. Participants are also informed directly of proposed changes to the program and other pertinent poultry information. Participation is renewed on an annual basis.

For more information about the Poultry Health and Improvement Program, contact the Animal Health Division at (573) 751-3377.

# Pullorum Testing

The test used to identify the *Salmonella pullorum* bacteria requires a small blood sample, gathered from a wing of each test eligible bird in the flock. The sample is placed in an antigen solution and the inspector observes whether the blood forms clumps (agglutination) within the solution. Because the blood of a non-infected bird does not contain antibodies, it will not agglutinate, and therefore produce a "negative" result. If antibodies are present, the blood sample will clump within about two minutes, providing nearly instantaneous test results. Fowl typhoid is closely related to pullorum and the antigen will also detect birds infected with fowl typhoid.